ADDITIONAL

Service Manual

PIONEER

AM/FM STEREO RECEIVER

SX-690

HG

HGW4

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MODEL SX-680 COMES IN FOUR VERSIONS DISTINGUISHED AS FOLLOWS:

Type	Voltage	Remarks
KU	120V only	U.S.A. model
KC	120V only	Canada model
S	110V, 120V, 220V and 240V (Switchable)	General export model
S/G	110V, 120V, 220V and 240V (Switchable)	U.S. Military model

MODEL SX-690 COMES IN THREE VERSIONS DISTINGUISHED AS FOLLOWS:

Type	Voltage	Remarks
KU	120V only	U.S.A. model
HG	220V and 240V (Switchable)	United Kingdom model
HGW4	220V and 240V (Switchable)	Europe or Oceania model

- This additional service manual is applicable to the SX-690/HG, HGW4. Connections, set handling, circuitry, and adjustment are basically the same as SX-680/KU.
- The parts which are different from the SX-680/KU are covered in this additional service manual. Please use this manual together with the SX-680/KU service manual which is previously issued when ordering parts and repair.

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1. CONTRAST OF MISCELLANEOUS PART

ASSEMBLIES

Symbol	Part Name	Part No.		
		SX-680/KU	SX-690/HG	SX-690/HGW4
	Main Board Assembly	GWM-117	GWM-120	GWM-120
	De-emphasis Switch Assembly	GWX-180	.....	.....
	FM Front-end	GWB-101	GWB-102	GWB-102
	Tape Assembly	GWX-186	GWX-188	GWX-188
	Fuse Holder Assembly	GWX-178	GWX-190	GWX-190

TRANSFORMER

Symbol	Part Name	Part No.		
		SX-680/KU	SX-690/HG	SX-690/HGW4
T1	Power transformer	ATT-511	ATT-524	ATT-524

SWITCHES

Symbol	Part Name	Part No.		
		SX-680/KU	SX-690/HG	SX-690/HGW4
S9	Push switch (POWER)	ASG-503	ASG-504	ASG-504
S10	Plug in selector (Line voltage selector)	.....	AKX-057	AKX-057

RESISTOR

Symbol	Part Name	Part No.		
		SX-680/KU	SX-690/HG	SX-690/HGW4
R1	Wire wound 47 5W	.....	ACN-033	ACN-033

CAPACITOR

Symbol	Part Name	Part No.		
		SX-680/KU	SX-690/HG	SX-690/HGW4
C2	Cermic 0.01 125V	ACG-003	.....	.....

FUSES

Symbol	Part Name	Part No.		
		SX-680/KU	SX-690/HG	SX-690/HGW4
FU1	Fuse 4A	AEK-100	.....	.....
	Fuse 2A	.....	AEK-017	AEK-017
FU2	Fuse 1.5A	AEK-104	.....	.....
	Fuse 1.6A	.....	AEK-405	AEK-405

Symbol	Part Name	Part No.		
		SX-680/KU	SX-690/HG	SX-690/HGW4
FU3	Fuse 5A	AEK-108	.....	.....
	Fuse 5A	.....	AEK-015	AEK-015
FU4	Fuse 5A	AEK-108	.....	.....
	Fuse 5A	.....	AEK-015	AEK-015
FU5	Fuse 1A	.....	AEK-402	AEK-402
FU6	Fuse 1A	.....	AEK-402	AEK-402

OTHERS

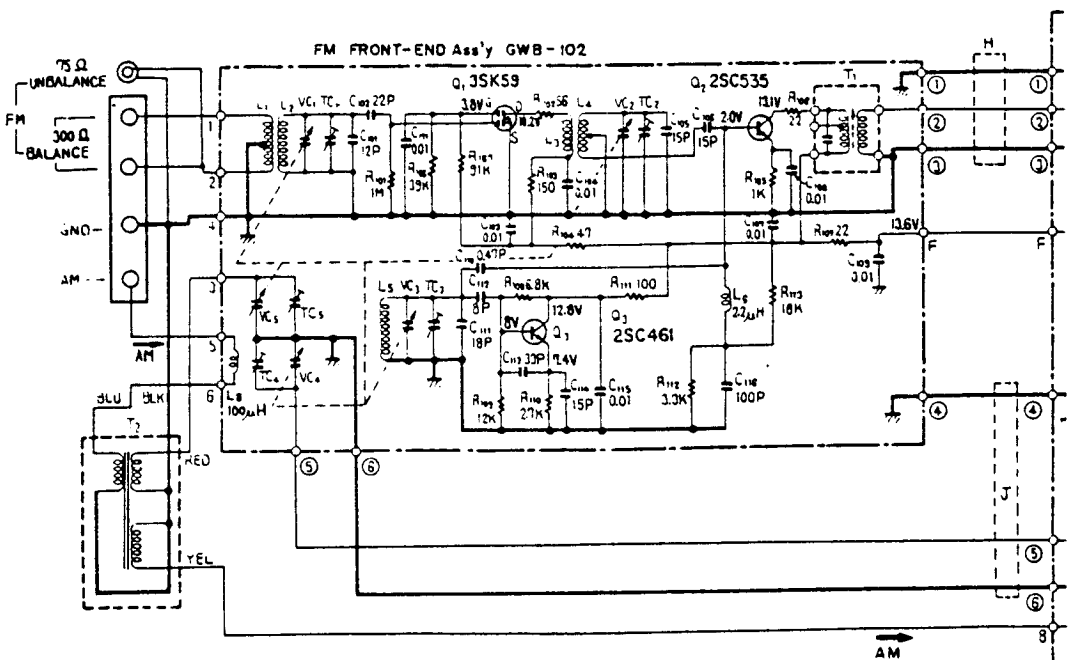
Symbol	Part Name	Part No.		
		SX-680/KU	SX-690/HG	SX-690/HGW4
	AC power cord	ADG-023	.....	.....
	AC socket (OUTLET)	AKP-004	.....	.....
	AC socket (INLET)	.....	AKP-008	AKP-008
	Fuse holder 1P	.....	K91-008	K91-008
	Panel mount coaxial connector	.....	AKP-016	AKP-016
	Capacitor cover (for C1)	AEC-294	AEC-099	AEC-099
	Capacitor cover (for C2)	AEC-279	.....	.....
	Bonnet	AMM-071	.....	.....
	Top plate	.....	ANE-202	ANE-202
	Side panel (L)	.....	AMS-031	AMS-029
	Side panel (R)	.....	AMS-032	AMS-030
	Front panel	ANB-596	ANB-600	ANB-600
	Dial scale board	AAG-158	AAG-160	AAG-160

PACKING

Symbol	Part Name	Part No.		
		SX-680/KU	SX-690/HG	SX-690/HGW4
	Operating instructions (English)	ARB-268	ARB-276	ARB-276
	(German/French)	.....	.....	ARD-122
	Packing case	AHD-551	AHD-559	AHD-559
	Vinyl bag (for AC cord)	AHG-023	.....	.....

2. SCHEMATIC DIAGRAMS, P.C.I

2.1 SCHEMATIC DIAGRAM



SWITCHES:

S_1: FUNCTION
1 AM
2 FM
3 PHONO
4 AUX

S_2: TAPE MONITOR 1
OFF — ON

S_3: TAPE MONITOR 2
OFF — ON

S_4: FM MUTE MODE
ON/ STEREO — OFF/ MONO

S_5: LOUDNESS
OFF — ON

S_6: SPEAKER A
OFF — ON

S_7: SPEAKER B
OFF — ON

S_8: POWER
OFF — ON

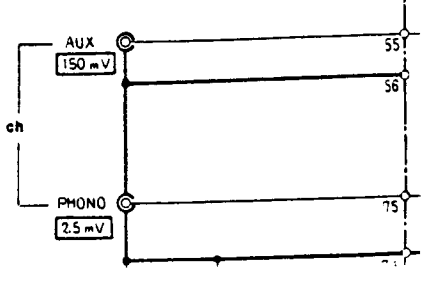
S_9: LINE VOLTAGE SELECTOR
220V — 240V

TUNING / SIGNAL METER

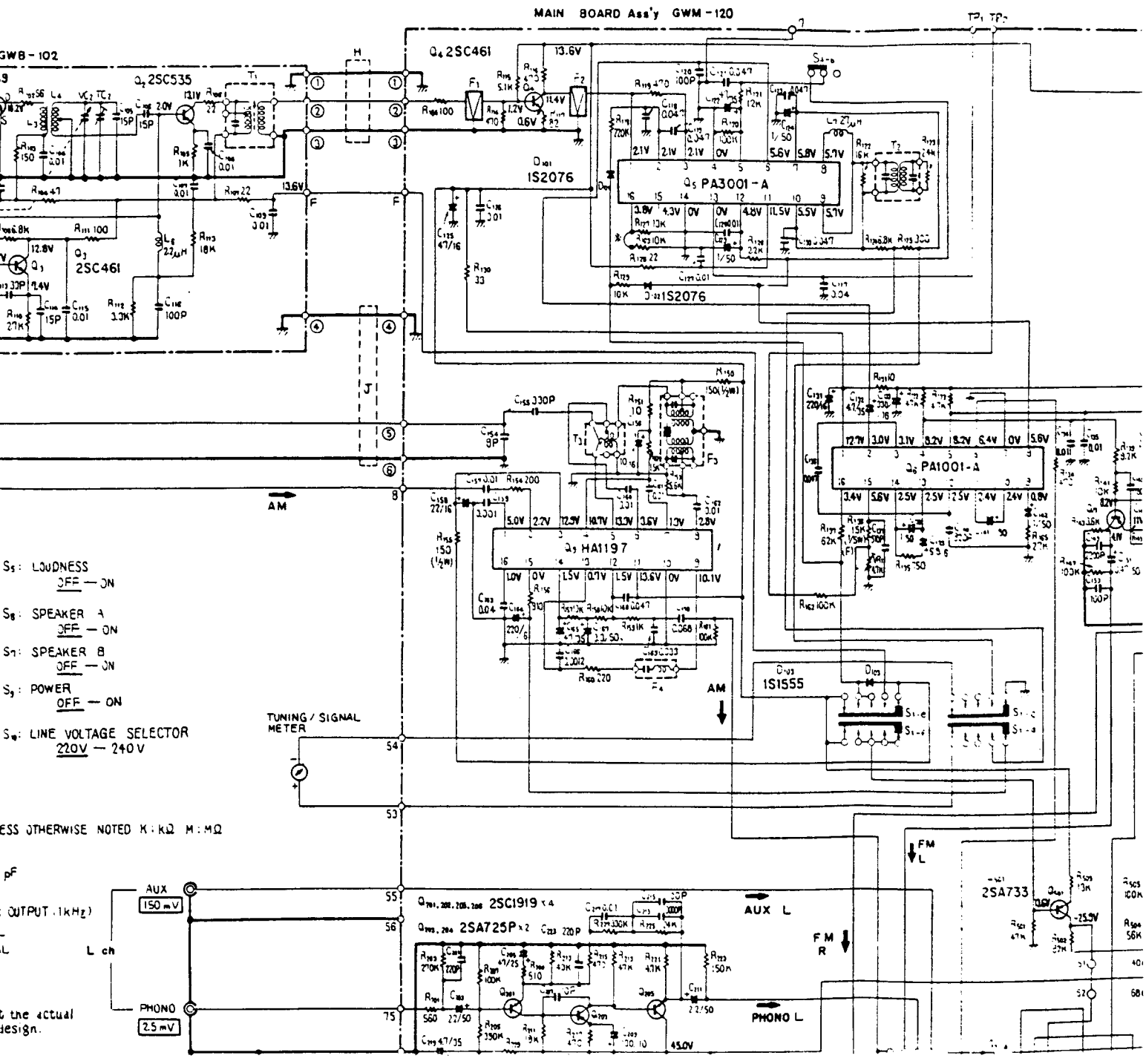
RESISTORS:
IN OHM 1/4W ±5% TOLERANCE UNLESS OTHERWISE NOTED K: kΩ M: MΩ
(F): ±1% TOLERANCE
CAPACITORS:
IN μF UNLESS OTHERWISE NOTED P: pF

[V] : SIGNAL VOLTAGE AT 30W+30W 8Ω OUTPUT (1kHz)
V : DC VOLTAGE AT NO INPUT SIGNAL
⇦ mA : DC CURRENT AT NO INPUT SIGNAL
(V) : DC VOLTAGE AT 30W OUTPUT

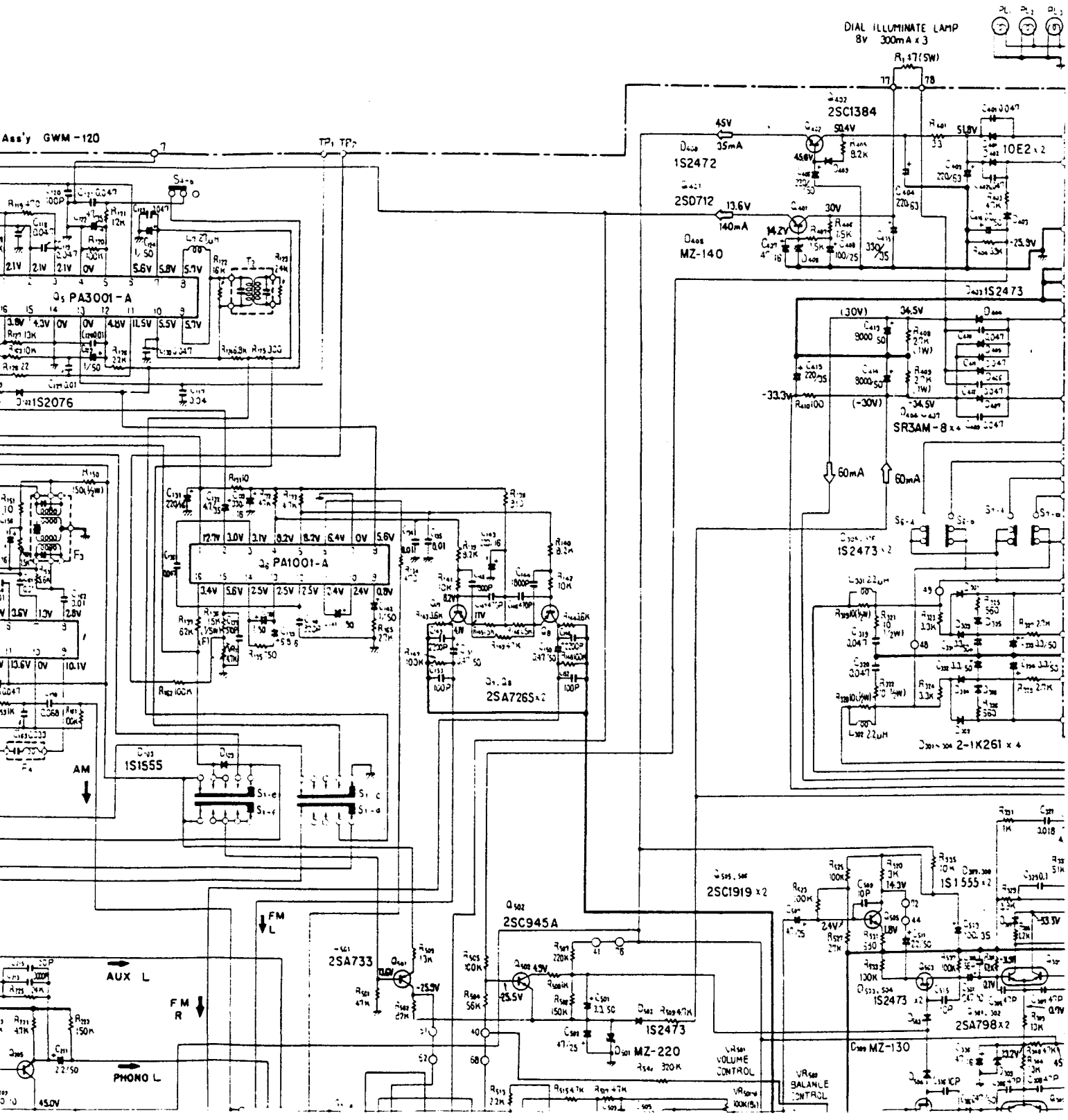
This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.



DIAGRAMS, P.C.BOARD PATTERNS AND PAR

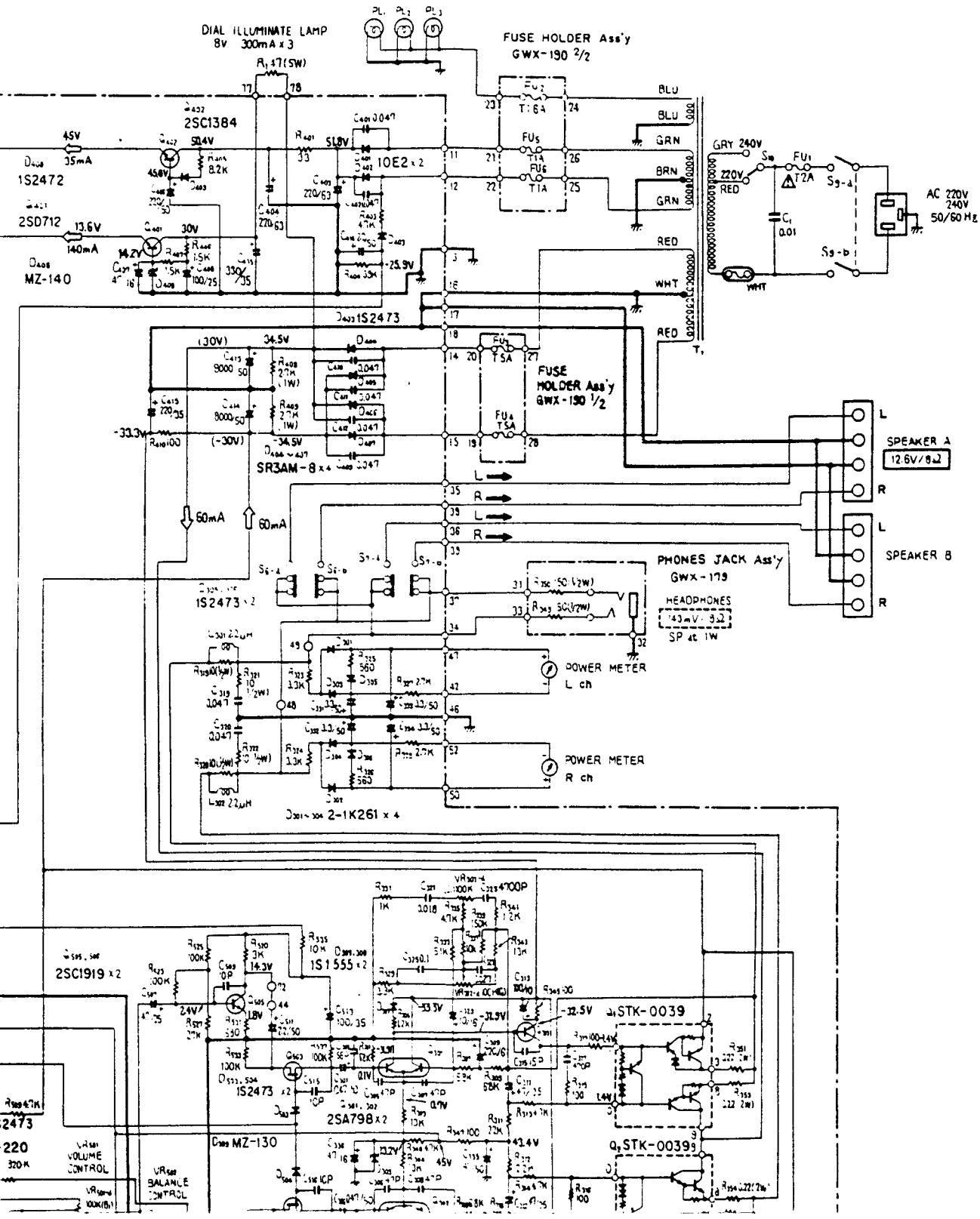


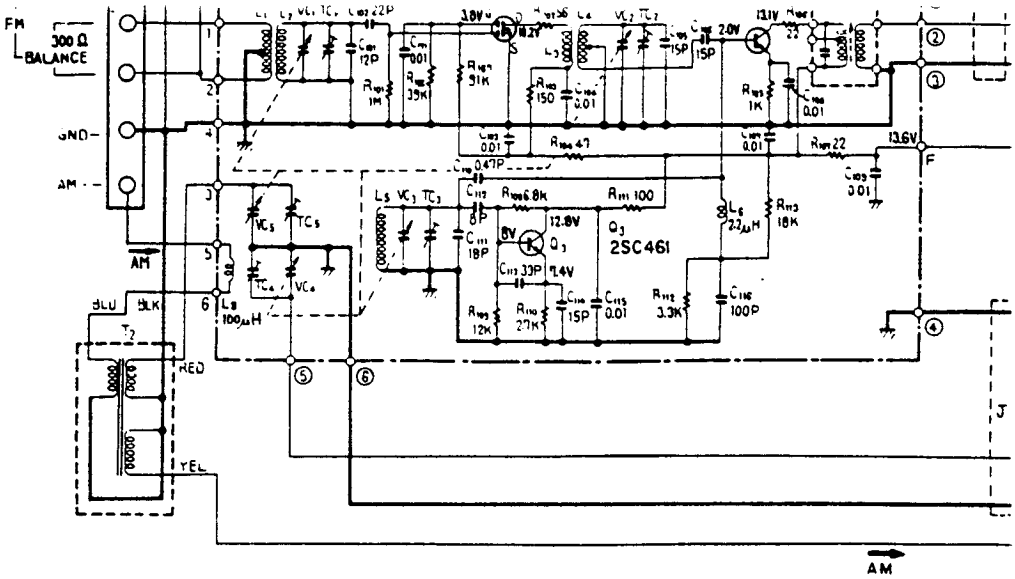
PATTERNS AND PARTS LIST



5 6

NOTE:
The indicated semiconductors are representative ones only. Other alternative semiconductors may be used and are listed in the parts list.





SWITCHES:

S_1: FUNCTION
1 AM
2 FM
3 PHONO
4 AUX

S_2: TAPE MONITOR 1
OFF — ON

S_3: TAPE MONITOR 2
OFF — ON

S_4: FM MUTE MODE
ON/STEREO — OFF/MONO

S_5: LOUDNESS
OFF — ON

S_6: SPEAKER A
OFF — ON

S_7: SPEAKER B
OFF — ON

S_8: POWER
OFF — ON

S_9: LINE VOLTAGE SELECTOR
220V — 240V

TUNING / SIGNAL METER

RESISTORS:
IN OHM 1/4W ±5% TOLERANCE UNLESS OTHERWISE NOTED K: kΩ M: MΩ
(F): ±1% TOLERANCE

CAPACITORS:
IN μF UNLESS OTHERWISE NOTED P: pF

[V] : SIGNAL VOLTAGE AT 30W+30W 8Ω OUTPUT (1kHz)
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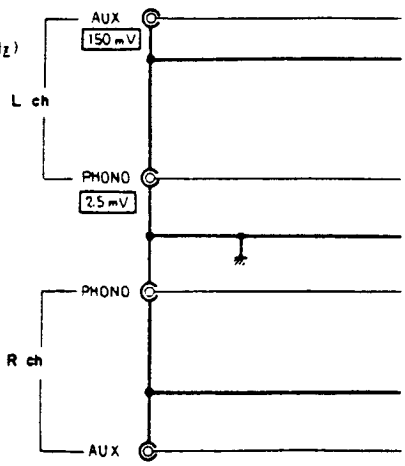
⇦ mA : DC CURRENT AT NO INPUT SIGNAL
(V) : DC VOLTAGE AT 30W OUTPUT

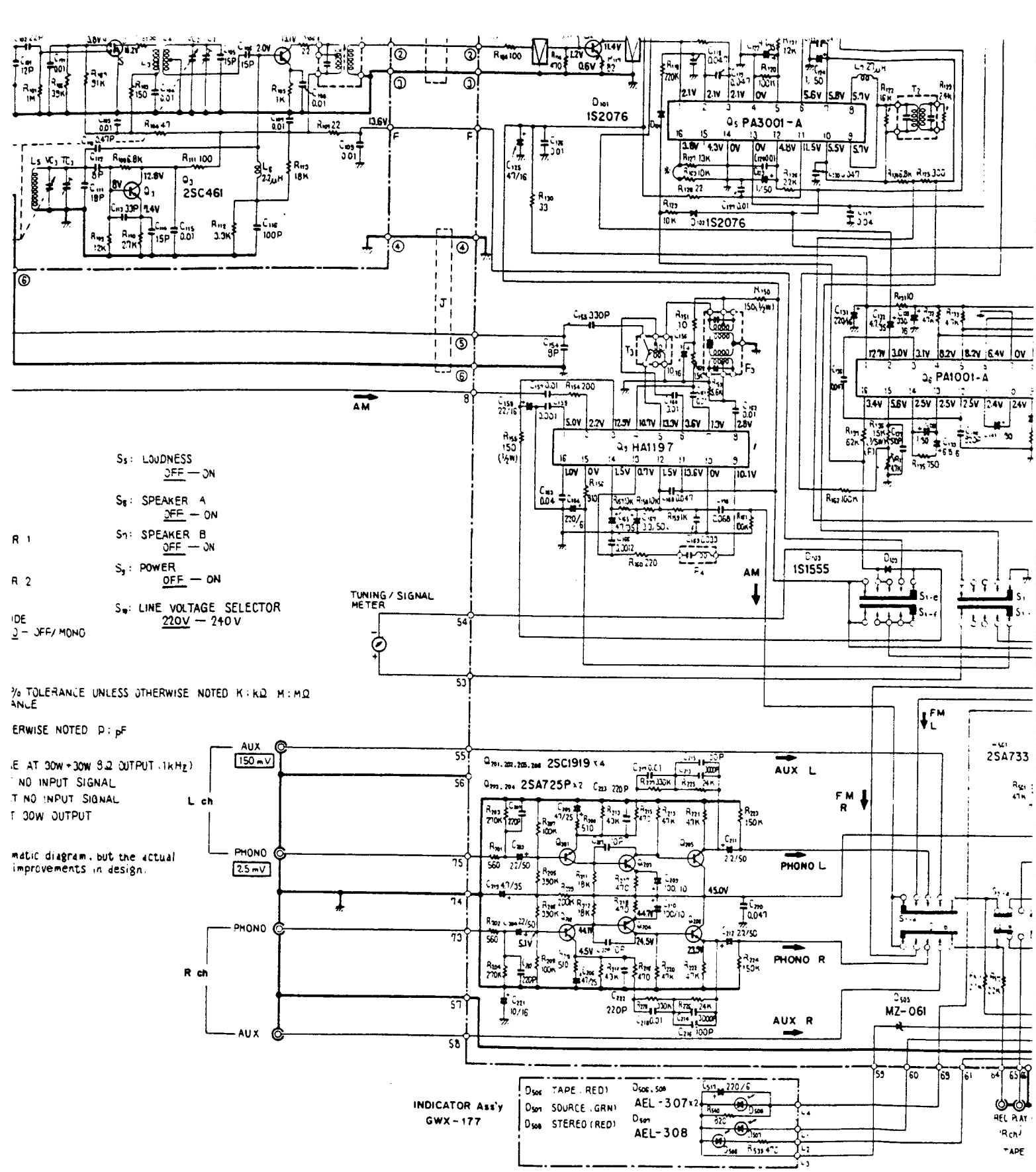
This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.



INDIC
GW)

B C D

1 2



S5: LOUDNESS
OFF — ON

S6: SPEAKER A
OFF — ON

S7: SPEAKER B
OFF — ON

S8: POWER
OFF — ON

S9: LINE VOLTAGE SELECTOR
220V — 240V

R 1

R 2

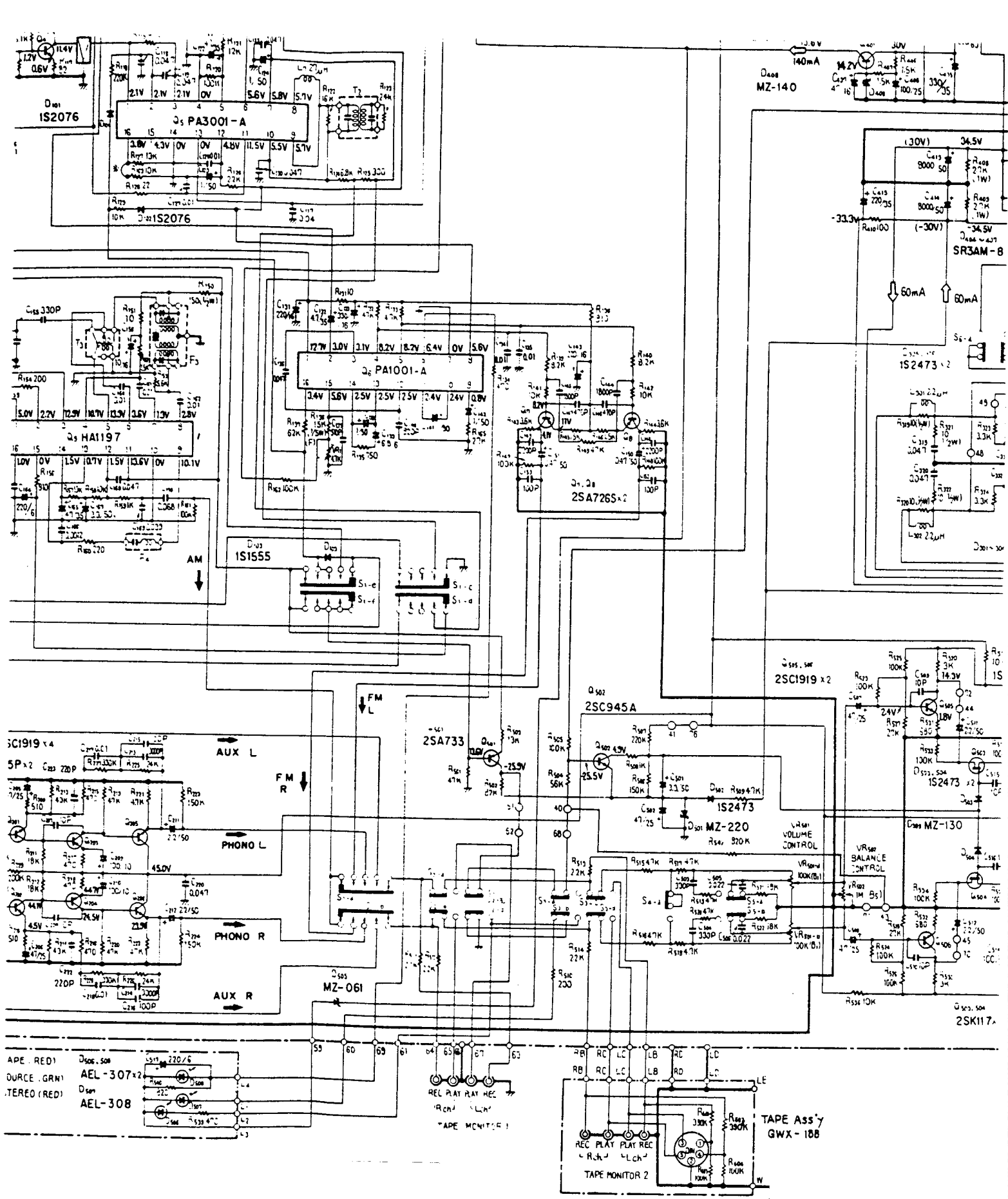
IDE
D — OFF/ MONO

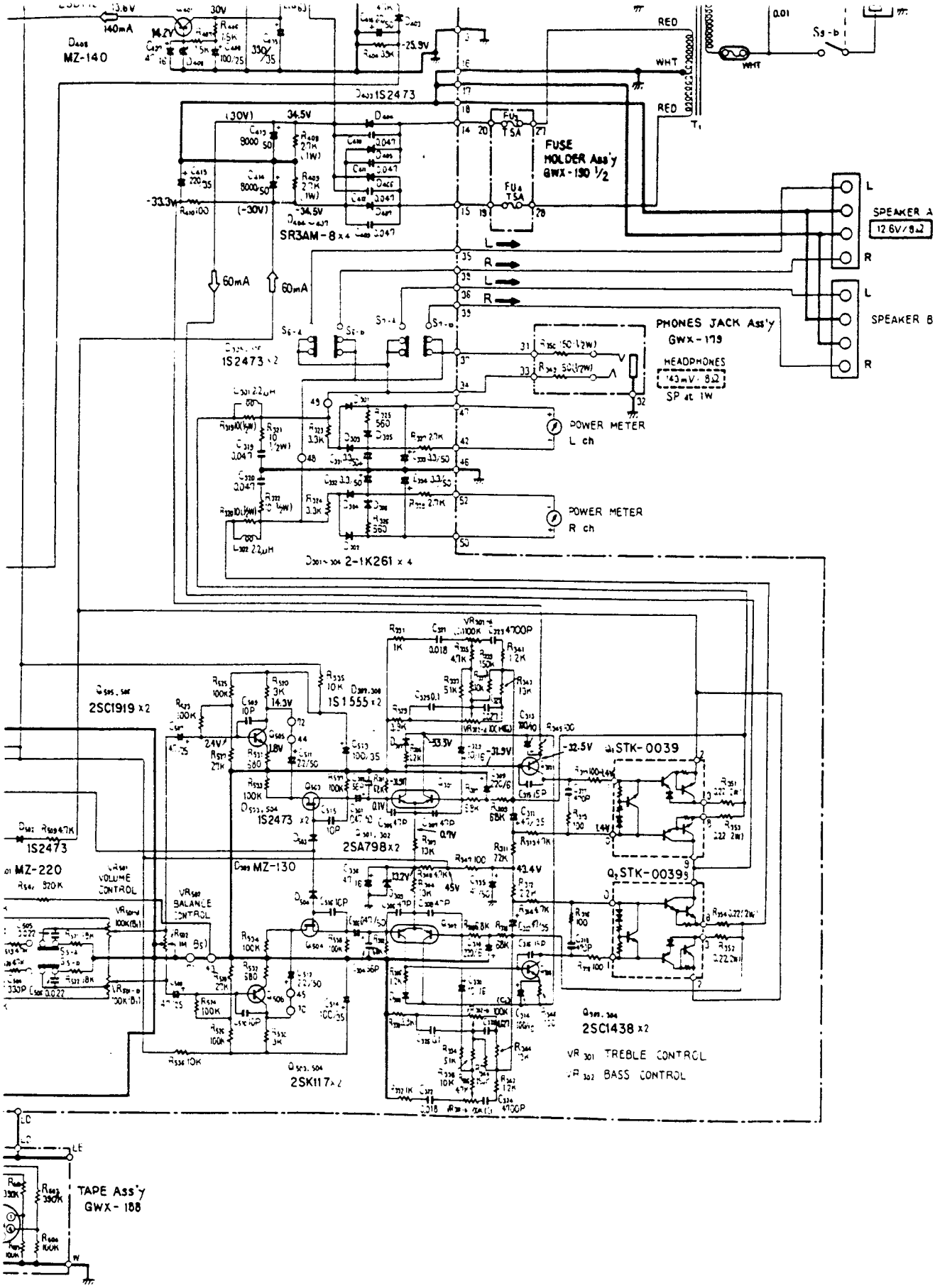
% TOLERANCE UNLESS OTHERWISE NOTED K : kΩ M : MΩ
ANCE

ERWISE NOTED P : pF

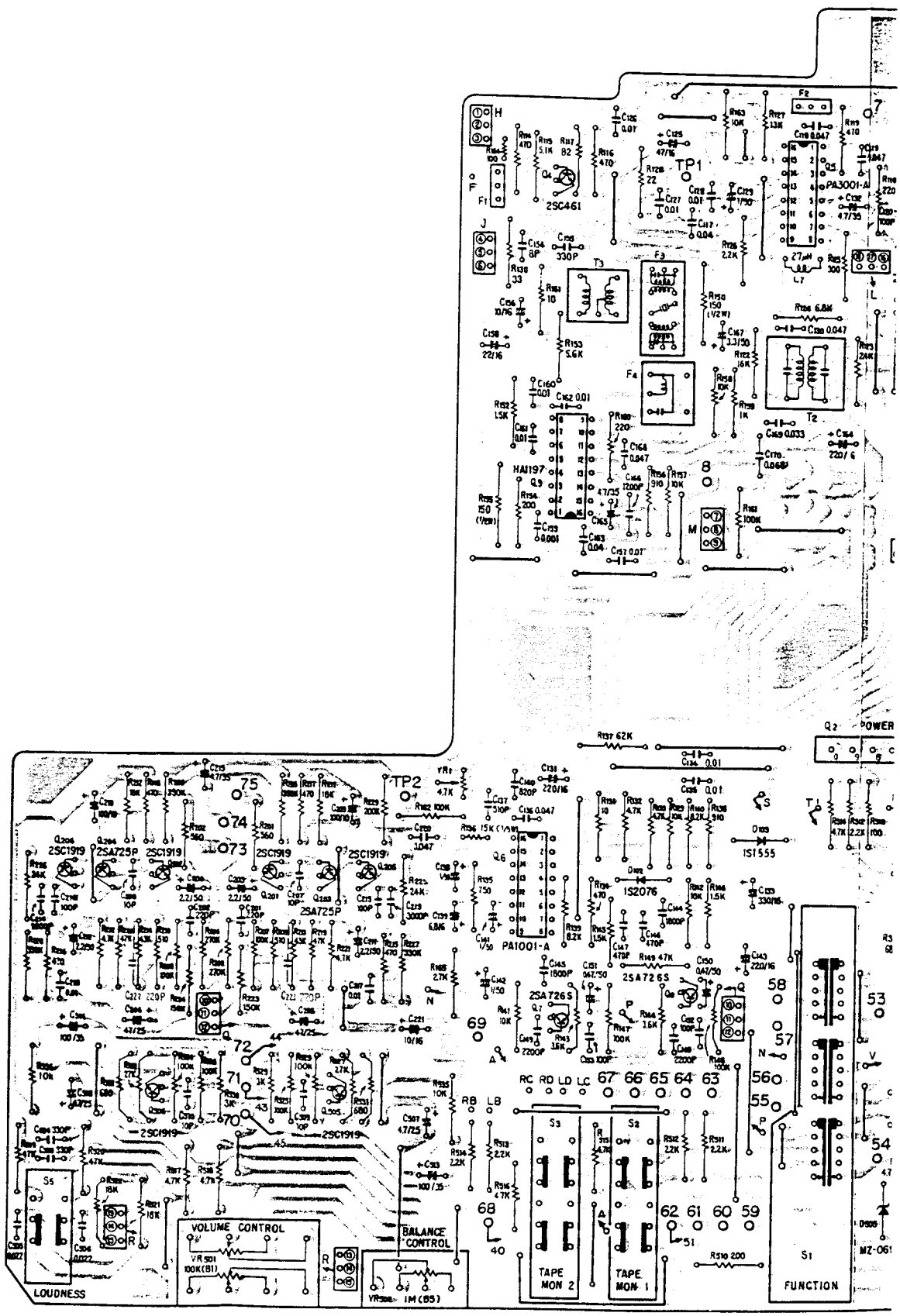
E AT 30W + 30W 8Ω OUTPUT (1kHz)
NO INPUT SIGNAL
T NO INPUT SIGNAL
T 30W OUTPUT

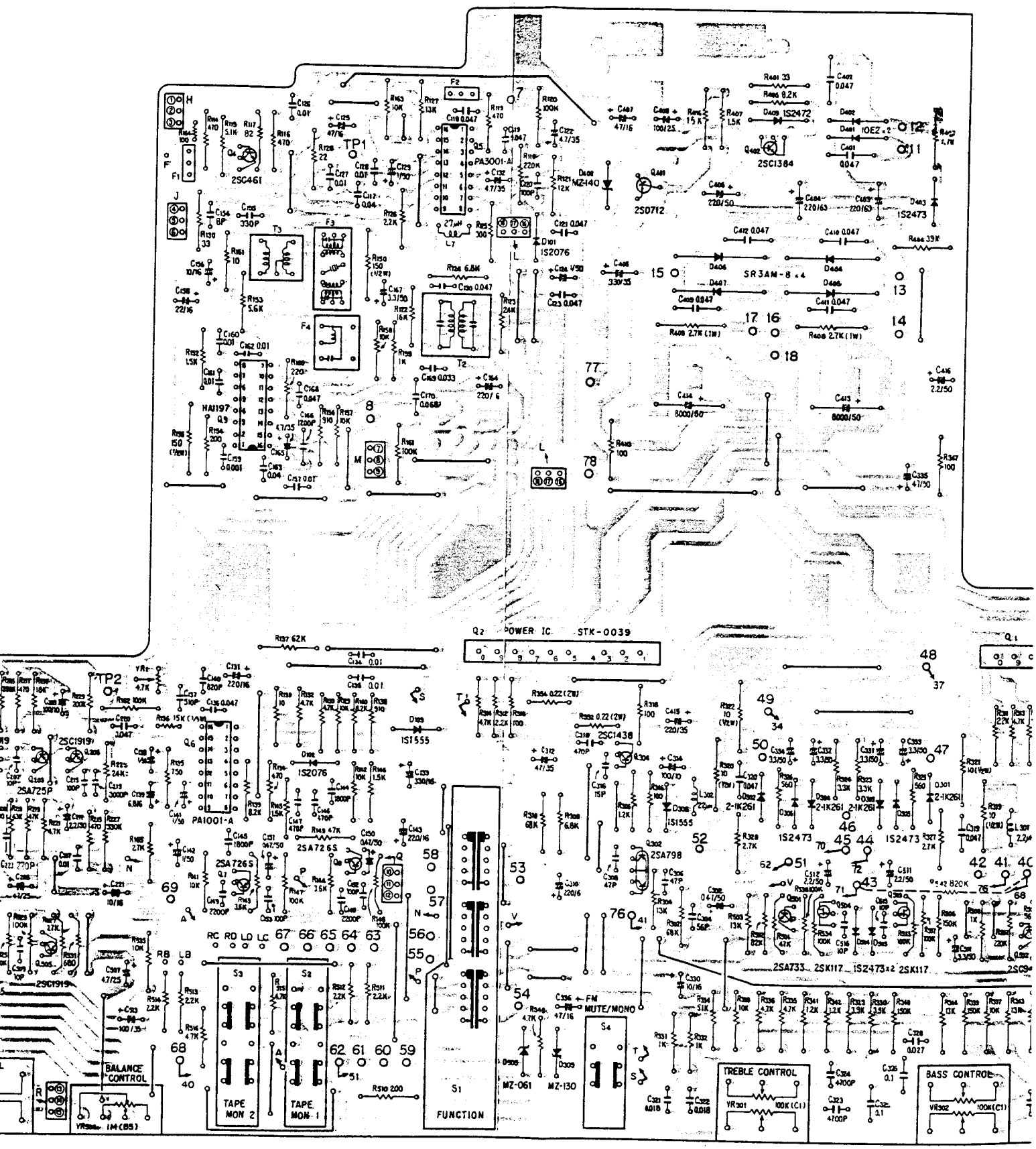
matic diagram, but the actual
improvements in design.

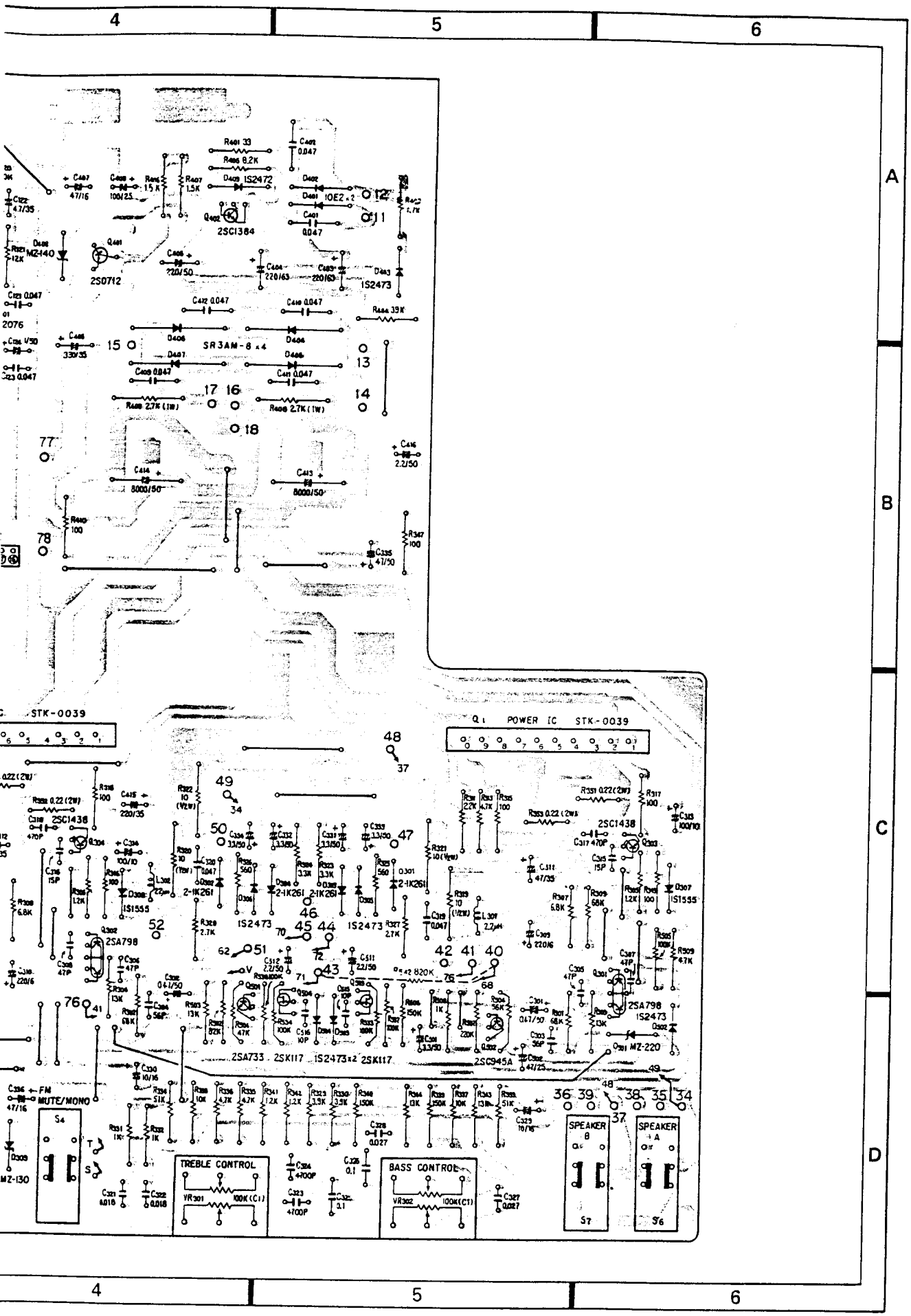

D101 1S2076
Q5 PA3001-A
D102 1S2076
Q5 HA1197
AM
D103 1S1555
Q6 PA1001-A
Q7, Q8 2SA726S×2
D408 MZ-140
140mA
SR3AM-8
60mA
60mA
1S2473×2
FM L
FM R
AUX L
AUX R
PHONO L
PHONO R
Q502 2SC945A
2SA733
D501 MZ-220
1S2473
VOLUME CONTROL
BALANCE CONTROL
2SC1919×2
2SC1919×4
D505 MZ-061
D506, 508 AEL-307×2
D507 AEL-308
REC PLAY PLAY REC
TAPE MONITOR 1
TAPE MONITOR 2
TAPE Ass'y GWX-188
D509 MZ-130
2SK117

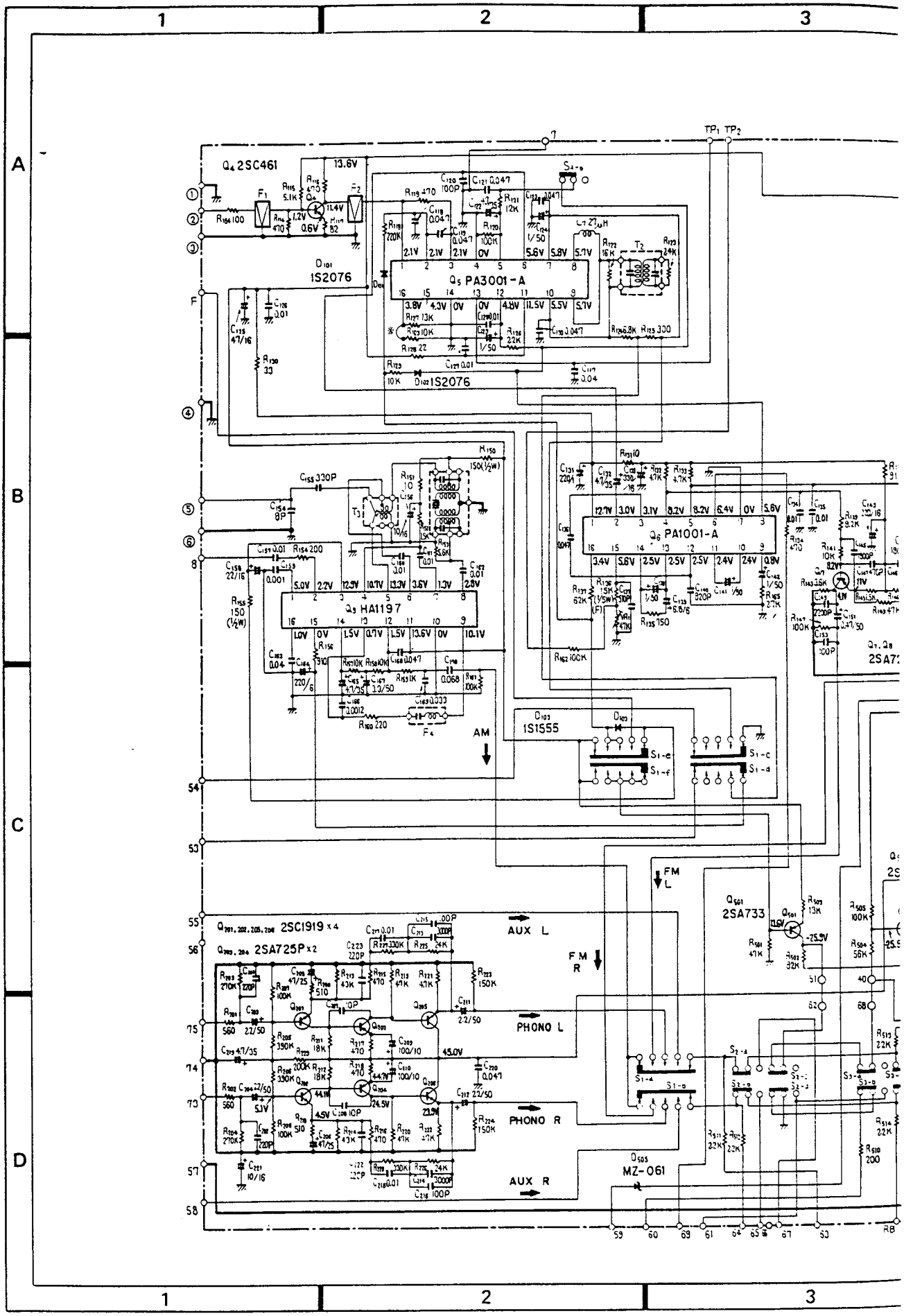

MZ-140
MZ-220
MZ-130
1S2473
SR3AM-8 x4
FUSE HOLDER Ass'y GWX-190 1/2
SPEAKER A
12.6V/8Ω
SPEAKER B
PHONES JACK Ass'y GWX-179
HEADPHONES
143mV/8Ω
SP at 1W
POWER METER L ch
POWER METER R ch
2-1K261 x 4
2SC1919 x2
1S1555 x2
2SA798 x2
2SK117 x2
2SC1438 x2
STK-0039
STK-00395
VR 301 TREBLE CONTROL
VR 302 BASS CONTROL
VOLUME CONTROL
BALANCE CONTROL
TAPE Ass'y GWX-188
RED
WHT
60mA
60mA

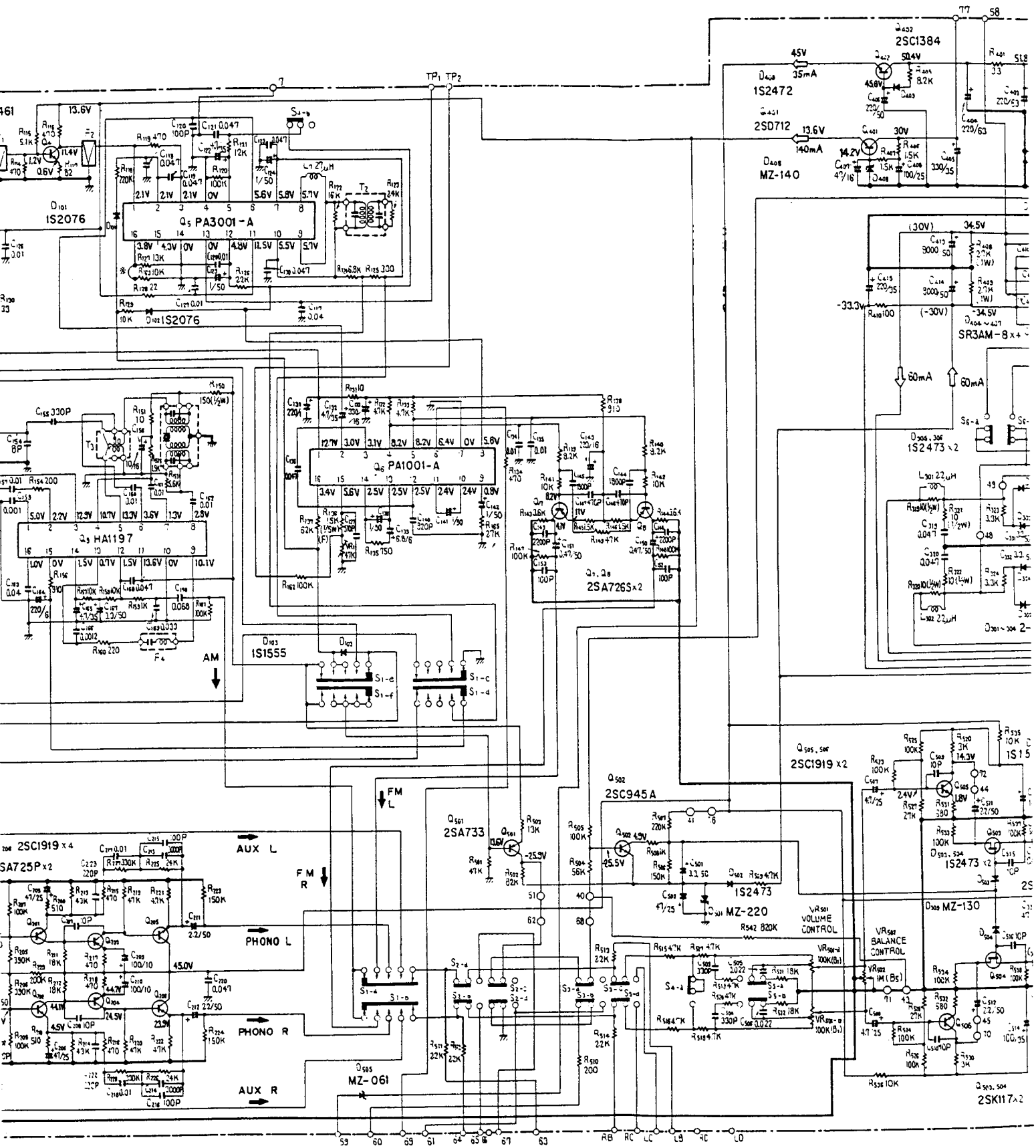
2.2 MAIN BOARD ASSEMBLY (GWM-120)

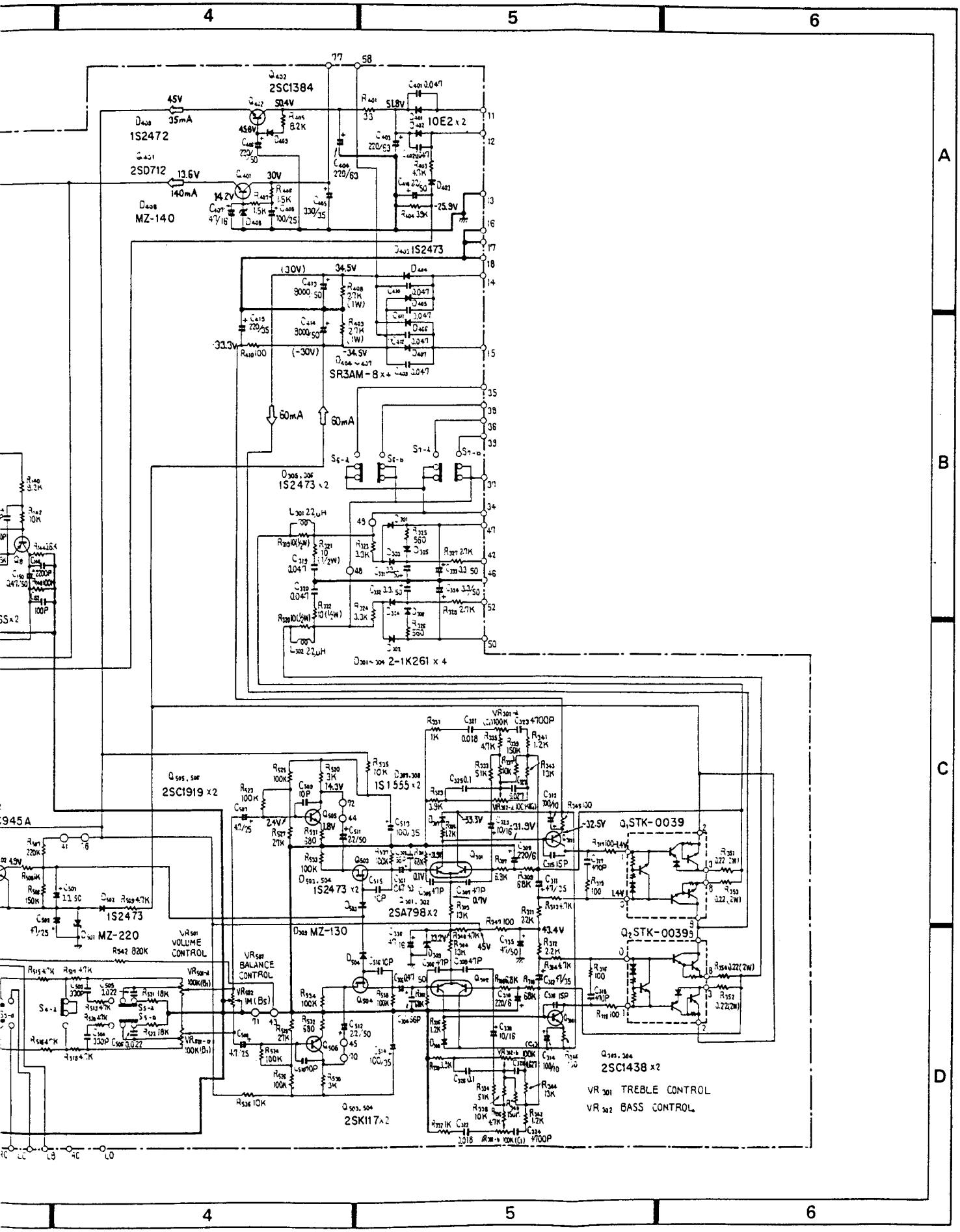



Q2 POWER IC STK-0039
TP1
TP2
PA3001-A
PA1001-A
SR3AM-8
2SC461
2SC1384
2SD712
2SC1919
2SA725P
2SA726S
2SA798
2SC1438
HA1197
IS2076
IS1555
IS2473
MZ-140
MZ-061
MZ-130
2SA733 2SK117 IS2473x2 2SK117 2SC9
BALANCE CONTROL
TAPE MON 2
TAPE MON 1
FUNCTION
FM MUTE/MONO
TREBLE CONTROL
BASS CONTROL


4
5
6
A
B
C
D
STK-0039
Q1 POWER IC STK-0039
2SC1384
2SA0712
IS2473
SR3AM-8 x4
2SC1438
2SA798
2SA733 2SK117 IS2473x2 2SK117
2SC945A
MZ-220
MZ-140
MZ-130
1S1555
2-1K261
TREBLE CONTROL
BASS CONTROL
SPEAKER B
SPEAKER A
MUTE/MONO


1
2
3
A
B
C
D
Q4 2SC461
Q5 PA3001-A
Q6 PA1001-A
Q9 HA1197
D101 1S2076
D102 1S2076
D103 1S1555
D505 MZ-061
Q201, 202, 205, 206 2SC1919 x 4
Q203, 204 2SA725P x 2
Q501 2SA733
AM
FM L
FM R
AUX L
AUX R
PHONO L
PHONO R
TP1 TP2


2
3
4
TP1 TP2
Q5 PA3001-A
Q6 PA1001-A
Q3 HA1197
Q1, Q8
2SA726S x2
Q401
2SC1384
Q402
2SD712
D408
MZ-140
D408
1S2472
D101
1S2076
D102 1S2076
D103
1S1555
D305, 306
1S2473 x2
SR3AM-8 x4
60mA
60mA
AM
FM
L
FM
R
AUX L
PHONO L
PHONO R
AUX R
Q501
2SA733
Q502
2SC945A
Q505, 506
2SC1919 x2
2SC1919 x4
SA725P x2
D501 MZ-220
D502 1S2473
D505 MZ-061
D506 MZ-130
D504 1S2473 x2
Q503, 504
2SK117 x2
VR501
VOLUME
CONTROL
VR502
BALANCE
CONTROL
53 60 63 61 64 65 67 66
RB RC LC LB RC LO


4
5
6
A
B
C
D
2SC1384
1S2472
2SD712
MZ-140
10E2 x 2
1S2473
SR3AM-8 x 4
2-1K261 x 4
2SC1919 x2
1S1555 x2
2SA798 x2
2SK117 x2
2SC1438 x2
MZ-130
MZ-220
Q1 STK-0039
Q2 STK-0039
VR501 VOLUME CONTROL
VR502 BALANCE CONTROL
VR 301 TREBLE CONTROL
VR 302 BASS CONTROL

Parts List of Main Board Assembly (GWM-120)

COILS AND FILTERS

Part No.	Symbol & Description	
ATF-013	F1, F2	FM ceramic filter
ATF-034	F3	AM ceramic filter
ATF-038	F4	455 kHz BPF
ATE-040	T2	FM DET
ATB-013	T3	AM osc. coil
ATH-022	L7	Micro inductor

SWITCHES

Part No.	Symbol & Description	
ASE-107	S1	Slide rotary (FUNCTION)
ASG-140	S2, S3	Dual push (TAPE MONITOR 1, 2)
ASG-138	S4, S5	Push (MODE/FM MUTE, LOUDNESS)
ASG-139	S6, S7	Dual push (SPEAKERS A, B)

CAPACITORS

Part No.	Symbol & Description
CCDSL 221K 50	C201, C202, C222, C223
CEANL 2R2P 50	C203, C204, C211, C212, C511, C512
CEANL R47M 50	C301, C302
CEANL 470P 25	C205, C206
CCDSL 100F 50	C207, C208, C509, C510, C515, C516
CEA 101P 10	C209, C210, C313, C314
CKDYA 302J 50 (CQMA 302J 50)	C213, C214
CCDSL 101K 50	C215, C216, C120, C152, C153
CKDYA 103J 50 (CQMA 103J 50)	C217, C218, C134, C135
CEA 4R7P 35	C219, C122, C132, C165
CKDYF 473Z 50	C220, C319, C320, C118, C119, C121, C123
CKDYF 473Z 50	C130, C168
CEA 100P 16	C221, C156
CCDSL 560K 50	C303, C304
CCDSL 470K 50	C305–C308
CEA 220P 6	C309, C310
CEA 470P 35	C311, C312
CCDSL 150K 50	C315, C316
CCDSL 471K 50	C317, C318
CQMA 183J 50	C321, C322
CQMA 472J 50	C323, C324
CQMA 104J 50	C325, C326
CQMA 273J 50	C327, C328
CEANL 100P 16	C329, C330
CEA 3R3P 50	C331–C334, C167, C501
CEA 470P 16	C336, C125, C407
CEA 470P 50	C335
CKDYF 403Z 50	C117, C163
CKDYF 103Z 50	C126–C128, C157, C160–C162
CEA 221P 16	C131, C143
CEA 331P 16	C133
CQMA 473K 50	C136
CQSH 511J 50	C137
CEANL 010M 50	C138, C141
CSZA 6R8M 6	C139
CKDYB 821K 50	C140
CKDYB 182K 50	C144, C145
CKDYB 471K 50	C146, C147
CKDYB 222K 50	C148, C149
CCDXL 080F 50	C154
CEA 220P 16	C158
CKDYB 102K 50	C159
CEA 221P 6	C164
CKDYB 122K 50	C166
CQMA 683K 50	C170
ACG-009	C401, C402, C409–C412 Ceramic 0.047/150V
CEA 221P 63	C403, C404
CEA 331P 35	C405
CEA 221P 50	C406
CEA 101P 25	C408
ACH-082	C413, C414 Electrolytic 8000/50V
CEA 221P 35	C415
CQSH 331J 50	C155
CQMA 333K 50	C169
CEA 2R2P 50	C416
CCDSL 331K 50	C503, C504
CQMA 223J 50	C505, C506
CEANL 4R7P 25	C507, C508
CEA 101P 35	C513, C514
CEA 010P 50	C124, C129, C142
CEA R47P 50	C150, C151
CEA 470P 25	C502

Note: When ordering resistors, convert the resistance value into code form and then rewrite the part no. as before.

RESISTORS

Part No.	Symbol & Description	
C92-051	VR1	Semi-fixed 4.7k-B
ACV-186	VR301, VR302	Variable (TREBLE, BASS)
ACV-161	VR501	Variable (VOLUME)
ACT-019	VR502	Variable (BALANCE)
RD¼PS □□□ J	R114–R135, R137–R149, R151–R154	
RD¼PS □□□ J	R156–R163, R165, R201–R204, R209–R229	
RD¼PS □□□ J	R323–R346, R348, R403–R407, R501–R538	
RD¼PS □□□ J	R301–R314, R542	
RD¼PS □□□ JNL	R205–R208	
RD½PS □□□ J	R150, R155, R319, R320	
RD¼VS □□□ J	R164	
RN¼ SQ □□□□ F	R136	
RF½PS □□□ J	R321, R322	
RF¼PS □□□ J	R315–R318, R347, R401, R410	
RS1P □□□ J	R408, R409	
ACN-030	R351–R354 Wire wound 0.22/2W	

SEMICONDUCTORS

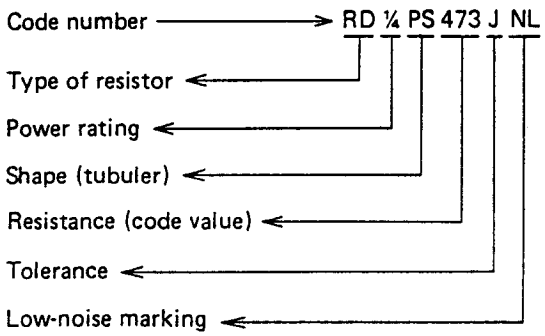
Part No.	Symbol & Description
2SC461-B or C	Q4
PA3001-A	Q5
PA1001-A	Q6
2SA726S-G or F (2SA750-E or F)	Q7, Q8
HA1197	Q9
2SC1919-G or F (2SC1400-E)	Q201, Q202, Q205, Q206, Q505, Q506
2SA725P-F or G	Q203, Q204
2SA798-F or G	Q301, Q302
2SC1438-V or B	Q303, Q304
2SD712-C or D (2SD313-D or E)	Q401
2SC1384-Q or R	Q402
2SA733-Q or R	Q501
2SC945A-Q or R	Q502
2SK117-GR or Y (2SK34-C or D)	Q503, Q504
1S2076 (1S2473) (1S1555)	D101, D102
1S1555 (1S2473)	D103, D403, D502–D504, D305–D308
2-1K261	D301–D304
MZ-130 (WZ-130)	D309
10E2 (SI801-02)	D401, D402
SR3AM-8 (30D4)	D404–D407
MZ-140 (WZ-140)	D408
1S2472 (1S1554)	D409
MZ-220 (WZ-220)	D501
MZ-061 (WZ-061)	D505

OTHERS

Part No.	Description
AKH-014	IC socket
ANH-203	Heat sink
ABN-047	Union nut
ABN-024	Washerfaced nut

RESISTANCE VALUE CODES

Code numbers of resistors used in Pioneer equipment are expressed in the following way:—



Furthermore, in the list of parts found in the Service Manual, the resistance (code value) part of the above code number is expressed as □□□ or □□□□.

Resistors included in the Service Manual list of parts

↓

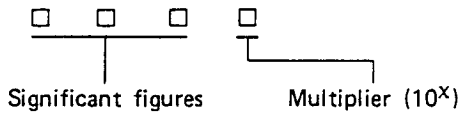
Ex. RD ¼ PS □□□ J NL

When ordering resistor components, first ascertain the actual resistance value from the circuit diagram, and then convert it into code no. form as shown in the following examples.

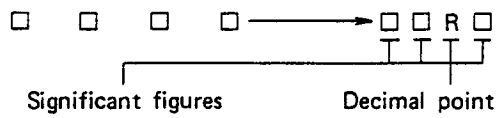
For further details on code numbers, refer to "Tuning Fork" VOL. 1.

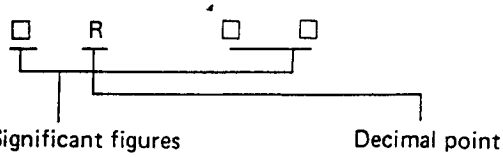
Ex. 1 For □□□□ Codes

* General resistors



* Resistors with fractional values



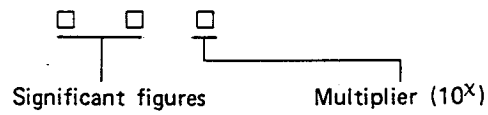


Ex. 1

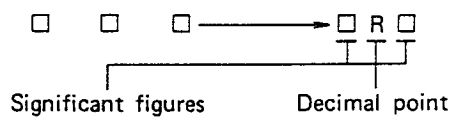
Nominal resistance (Ω)	Significant figure (three figures)	Multiplier (10X)	Resistance value code
5.1	510	.....	5R10
5.62	562	.....	5R62
10	100	.....	10R0
22.5	225	.....	22R5
110	110	$\times 10^0$	1100
1k (1000)	100	$\times 10^1$	1001
1.56k (1560)	156	$\times 10^1$	1561
10k (10000)	100	$\times 10^2$	1002
33.6k (33600)	336	$\times 10^2$	3362
112k (112000)	112	$\times 10^3$	1123
1M (1000000)	100	$\times 10^4$	1004
1.56M (1560000)	156	$\times 10^4$	1564

Ex. 2 For □□□ Codes

* General resistors



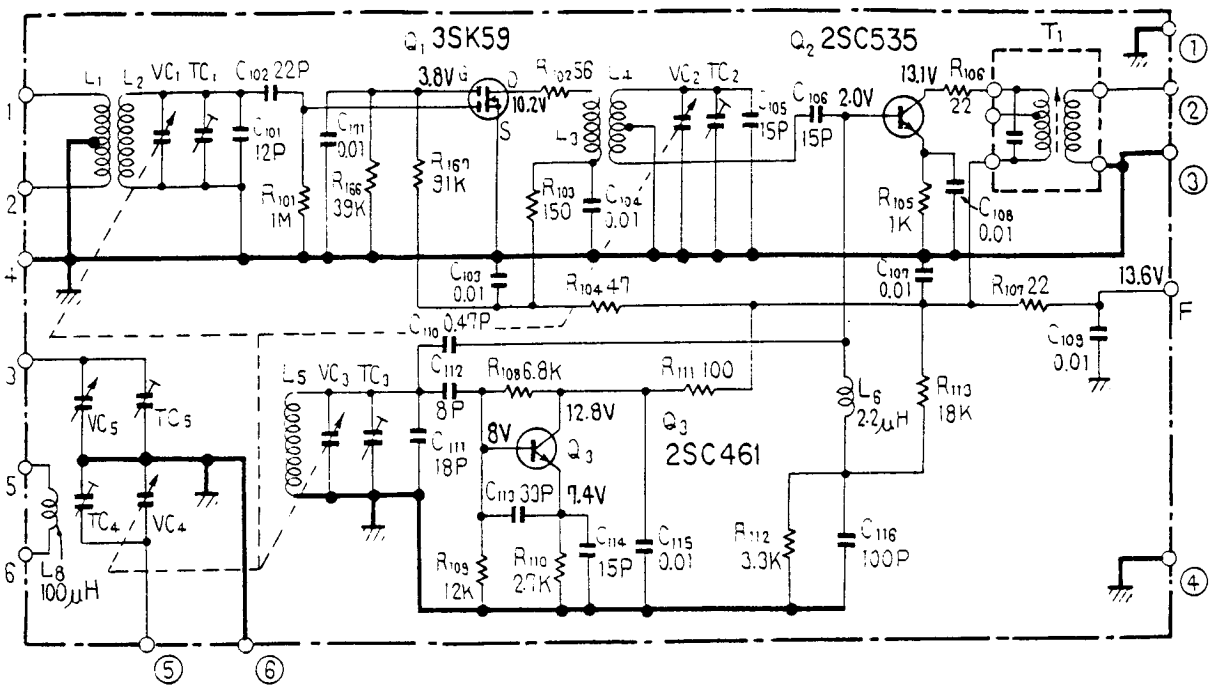
* Resistors with fractional values

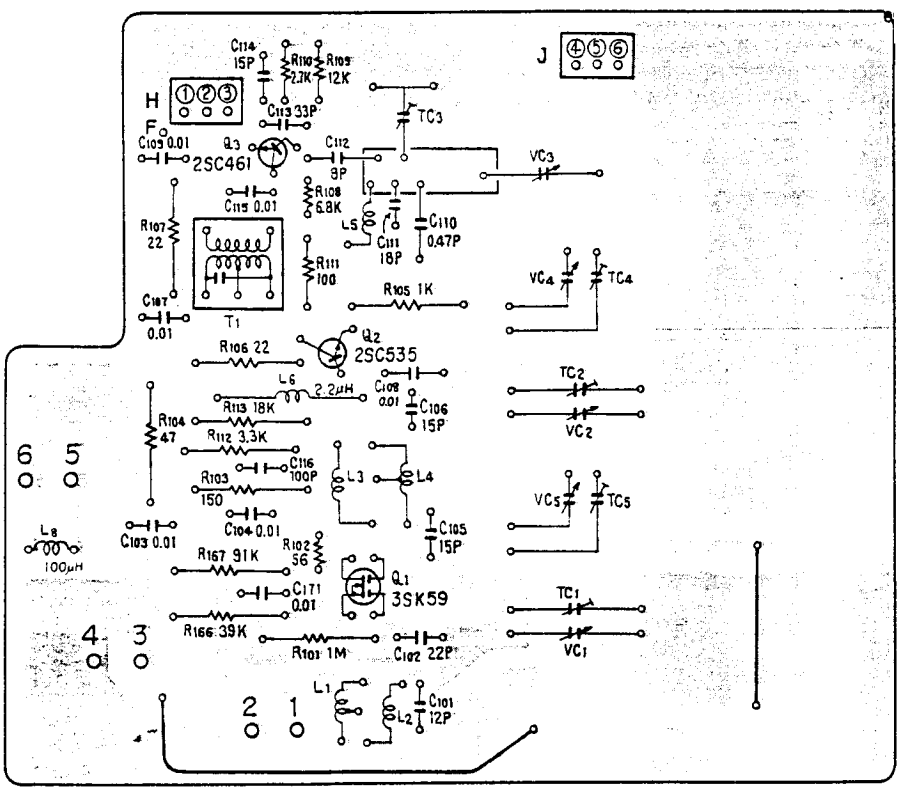


Ex. 2

Nominal resistance (Ω)	Significant figure (two figures)	Multiplier (10X)	Resistance value code
0.5	05	.....	0R5
1.5	15	.....	1R5
1	01	$\times 10^0$	010
22	22	$\times 10^0$	220
330	33	$\times 10^1$	331
1k (1000)	10	$\times 10^2$	102
5.6k (5600)	56	$\times 10^3$	562
68k (68000)	68	$\times 10^3$	683
820k (820000)	82	$\times 10^4$	824
1M (1000000)	10	$\times 10^5$	105
2.2M (2200000)	22	$\times 10^5$	225

2.3 FM FRONT-END (GWB-102)





Parts List of FM Front-end (GWB-102)

COILS AND TRANSFORMERS

Part No.	Symbol & Description		
T24-028	L6	Choke coil	2.2μH
T24-030	L8	Choke coil	100μH
ATE-039	T1	FM IFT	

CAPACITORS

Part No.	Symbol & Description	
ACK-012	VC	Tuning capacitor
ACM-006	TC3	Ceramic trimmer
CCDUJ 120K 50	C101	
CCDSL 220K 50	C102	
CKDYF 103Z 50	C103, C104, C107–C109, C115, C171	
CCDUJ 150K 50	C105	
CCDSL 150K 50	C106	
CGB R47K 500	C110	
CCDPH 180K 50	C111	
CCDLH 080F 50	C112	
CCDCH 330K 50	C113	
CCDCH 150K 50	C114	
CCDSL 101K 50	C116	

RESISTORS

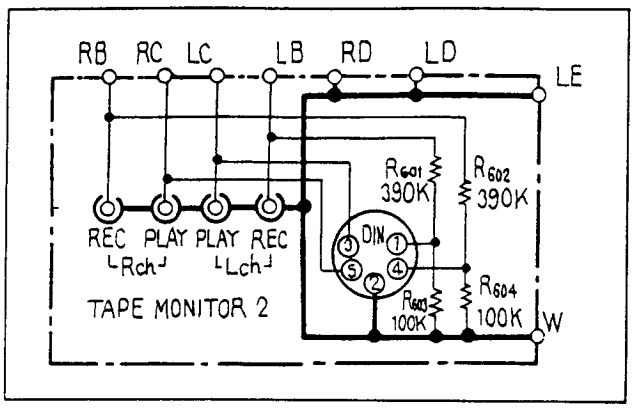
Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

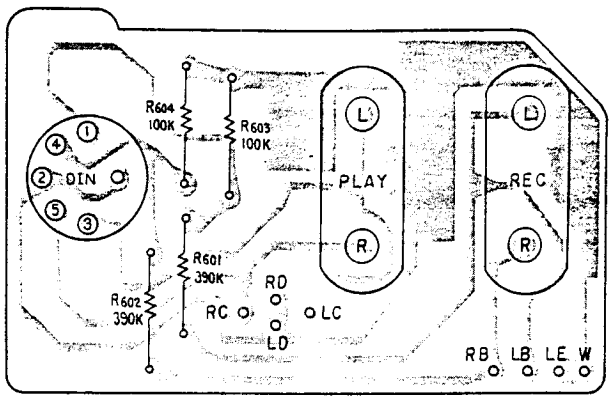
Part No.	Symbol & Description
RD¼PS □□□ J	R101, R103–R107, R112, R113, R166, R167
RD¼VS □□□ J	R102, R108–R111

SEMICONDUCTORS

Part No.	Symbol & Description
3SK59-Y or GR	Q1
2SC535-A or B	Q2
2SC461-B or C	Q3

2.4 TAPE ASSEMBLY (GWX-188)





Parts List

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

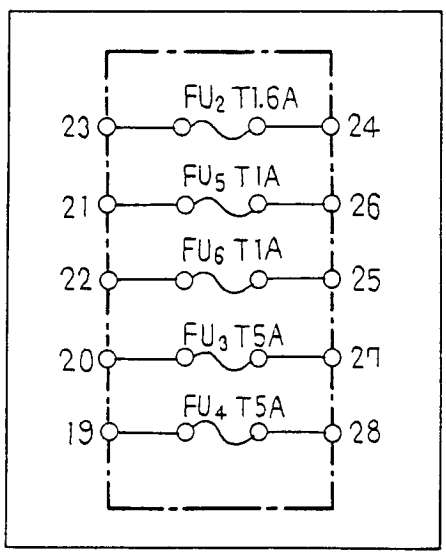
RESISTORS

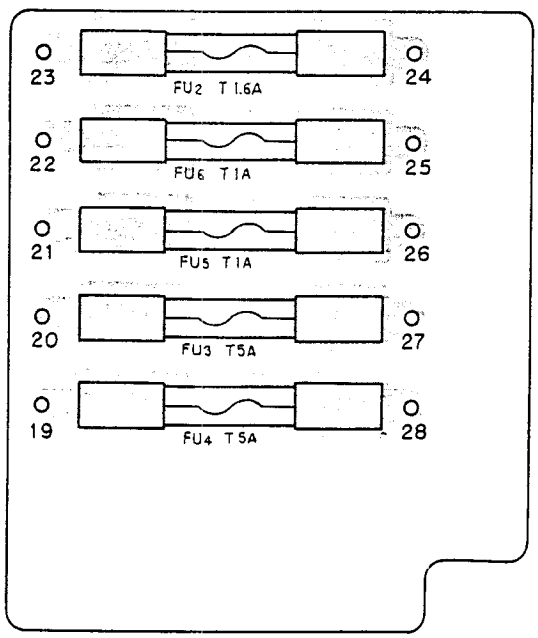
Part No.	Symbol & Description
RD¼PS □□□ J	R601 – R604

OTHERS

Part No.	Description
AKB-045	Terminal (TAPE 2)
AKP-011	Connector socket (REC/PLAY)

2.5 FUSE HOLDER ASSEMBLY (GWX-190)





Parts List

Part No.	Description
AKR-010	Fuse clip